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Sent: Wednesday, March 20, 2002 5:24 PM
To: Trombadore.Claire@epamail.epa.gov; Work.Michael@epamail.epa.gov
Subject: RE_ Hunters Point Radiological Removal Action Action Memorandum

Importance: High



Steve Dean/R9/USEPA/US

03/20/2002 06:23 PM

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March 20, 2002

MEMORANDUM

SUBJECT: RE: Hunters Point Radiological Removal Action Action Memorandum

FROM: Steve M. Dean (SFD-8-B)
Superfund Technical Support Team

TO: Claire Trombadore, Michael Work (SFD-8-3)
DOD and Pacific Islands Section

I have reviewed both the **Basewide Radiological Removal Action Action Memorandum** and New World Technology's **Hunters Point Naval Shipyard, Class III MARSSIM Surveys Workplan**. Both documents cite a cleanup goal for radium 226 (Ra226) in soils that does not comply with the CERCLA cancer risk range requirements for unrestricted use for either Commercial and Residential scenarios.

The Removal Action Memorandum states in Table 1 titled Radiological Removal Action Cleanup Goals - Soils And Debris/ Slag that the commercial reuse cleanup goal is "less than 5 picoCuries per gram (pCi/g) above background averaged over 100 square centimeters, for the top 15 centimeters." It also gives 40 CFR 192.12(a), the Uranium Mill Tailing Radiation Control Act (UMTRCA) as the ARAR using this goal. EPA Region 9

Superfund generally does not accept UMTRCA as an ARAR for remediation of radioactive contamination from radium devices unless institutional controls are also being implemented.

The remedial cleanup goal for Ra226 (plus progeny) in a residential scenario with unrestricted use is Indistinguishable From Background (IFB). This is the defacto Preliminary Remediation Goal (PRG) for Ra226 because the PRGs for Ra226 (plus progeny) calculated using the Superfund cancer risk model generate concentration values well below typical background concentrations of Ra226 in typical US soils.

Headquarters Office of Emergency and Remedial Response (HQ OERR) just posted Radionuclide Toxicity and Preliminary Goals for Superfund table in February of this year. This table can be downloaded from the website at <http://epa-prgs.ornl.gov/radionuclides/>. The PRGs for radium 226 listed in this table are very close to the values generated almost a decade ago by my **RiskCalc** software. The major change in the HQ OERR PRG table is that it lists PRG values for both Outdoor Worker and Indoor Worker for the Commercial scenario.

The PRGs listed in the OERR table for Ra226 and its daughters is 0.0248 pCi/g for Outdoor Worker Soil and 0.0553 pCi/g for Indoor Worker Soil. The new PRG for Ra226 including its progeny (or daughters) is 0.009 pCi/g in Residential soil. Since typical background levels for Ra226 is 0.8 pCi/g in San Francisco Bay Area soils; remediation to any of these PRG values is virtually impossible. Consequently, it has been Region 9 Superfund's position for at least seven years now that IFB is the defacto PRG for radium 226.

The Navy's rationale for using 5.0 pCi/g is that the PRGs for Ra226 (only) for Outdoor Worker Soil is 3.69 pCi/g and for Indoor Worker Soil is 7.21 pCi/g. Residential PRG for Ra226 only is still below typical background; ie, 0.0315 pCi/g. The major fallacy with this approach is that Ra226 and its decay progeny are virtually inseparable, therefore, the risk from its daughters must be included.

The irony of the Navy's PRG preference is that the best way of detecting Ra226 during field surveys that using gamma probes to detect the radioactive bismuth and lead daughters of radium and not the weak gamma emissions from radium itself. It is scientifically indefensible to use the radium progeny to detect radium's presence but ignore the cancer risk from the same progeny.

If you have any questions or comments please contact me at (415) 972-3071.